

FIG. 1

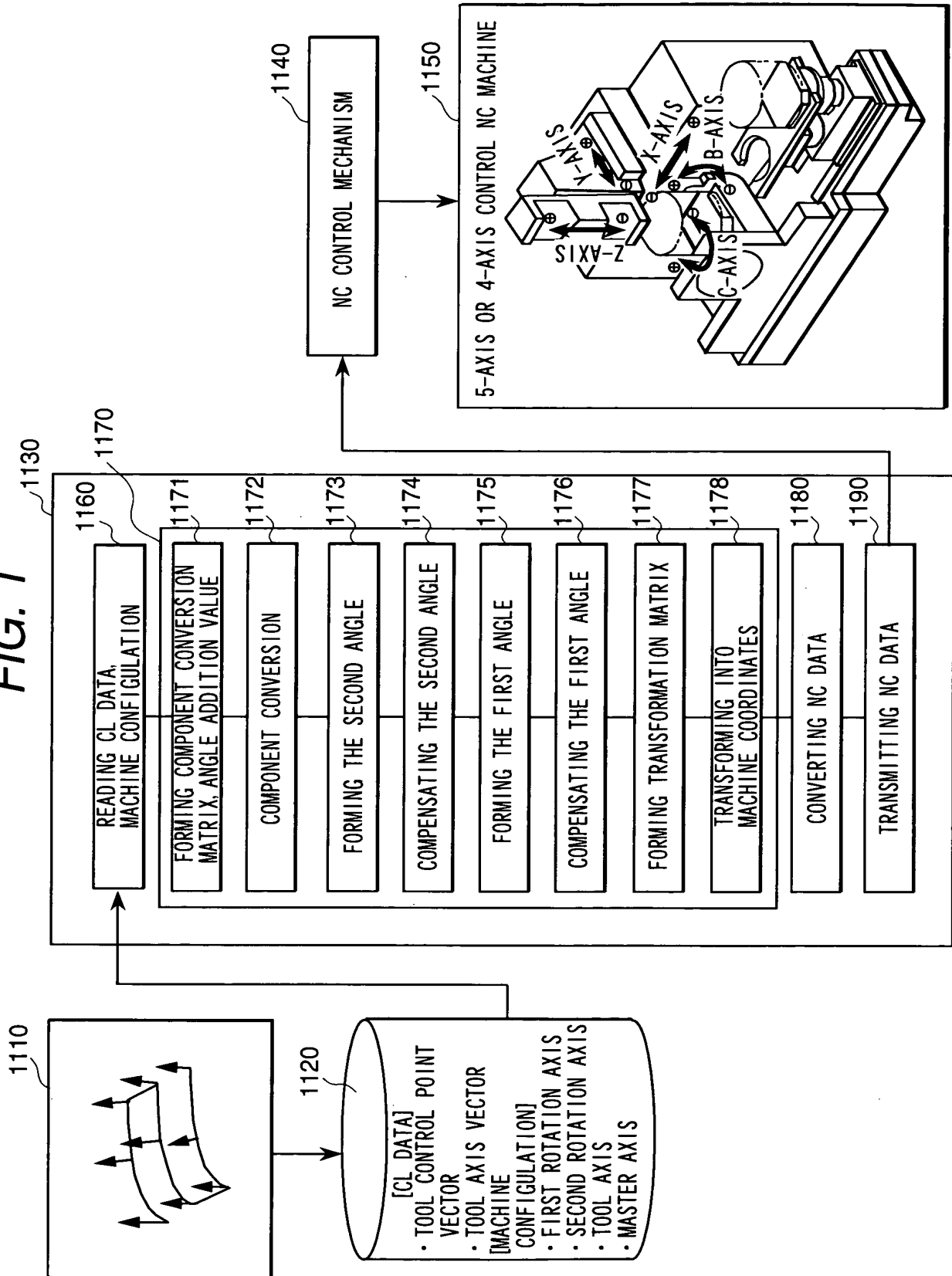


FIG. 2

MACHINE CONFIGURATION				COMPONENT TRANSFORMATION MATRIX M_a	AXIS TRANSFORMATION MATRIX M_c	ANGLE ADDITION VALUE Δ
FIRST ROTATION AXIS	SECOND ROTATION AXIS	TOOL AXIS	MASTER AXIS			
A	C	Z	NOT DESIGNATED	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	0
B	C	Z	NOT DESIGNATED	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	0
B	A	X	NOT DESIGNATED	$\begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	0
A	B	Z	B	$\begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\frac{\pi}{2}$
B	A	Z	A	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	$\frac{\pi}{2}$

1210

FIG. 3

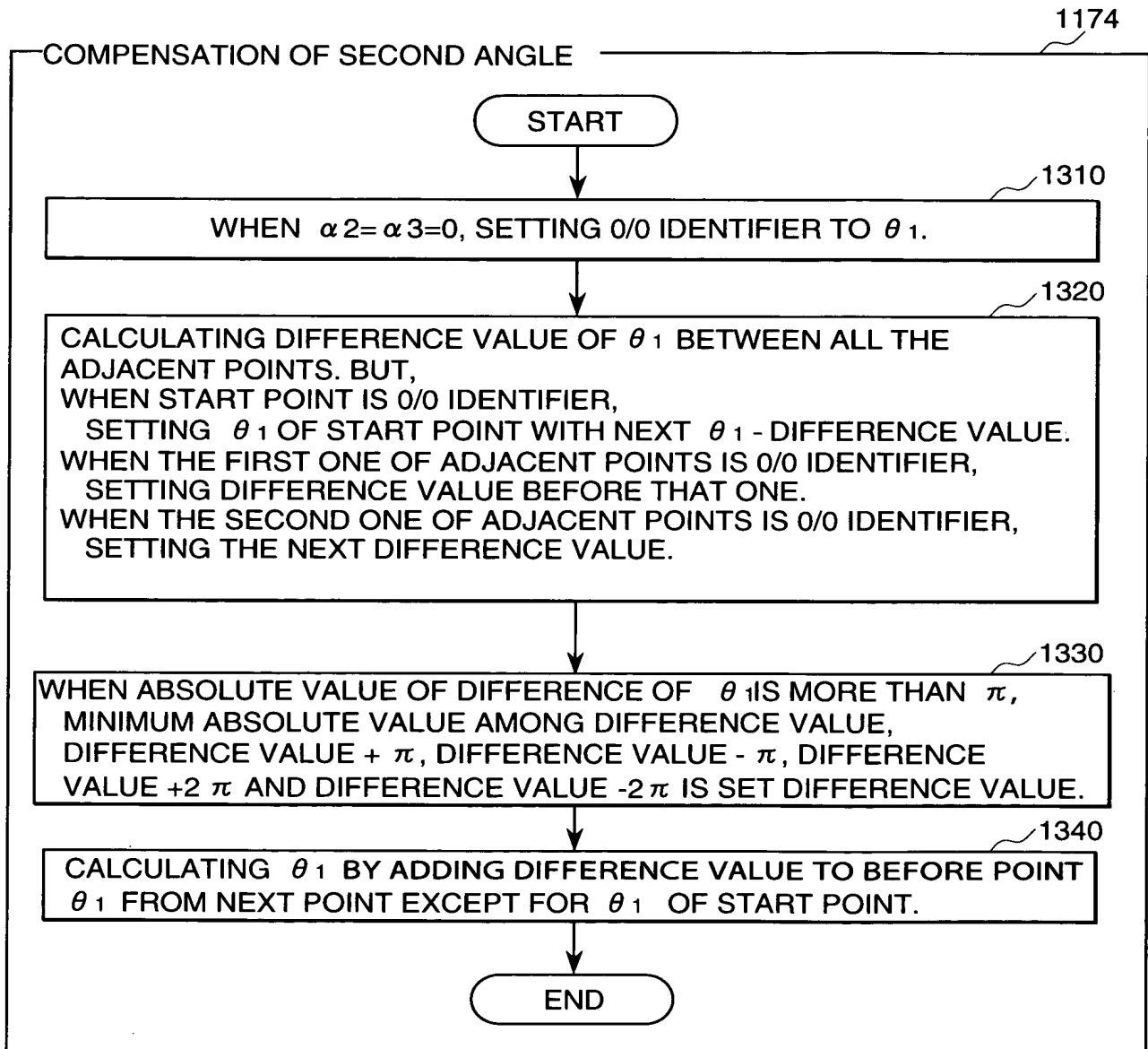


FIG. 4

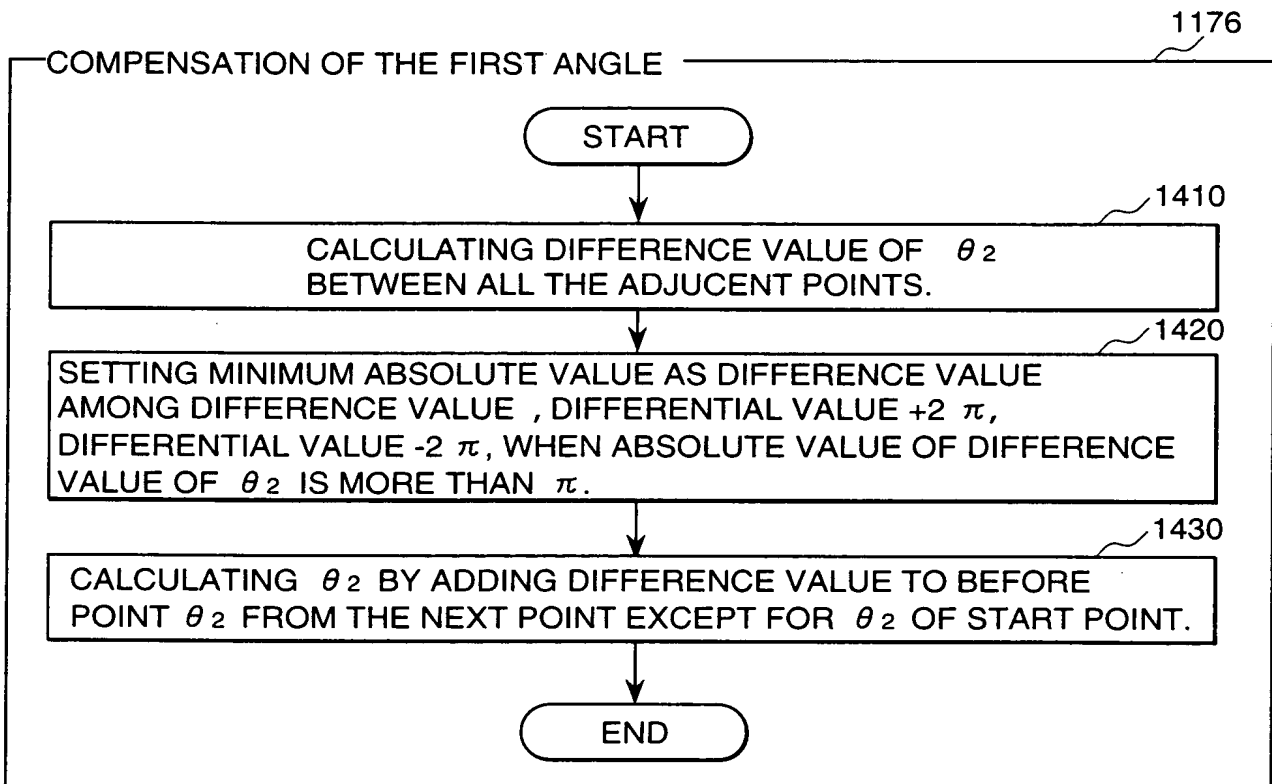


FIG. 5

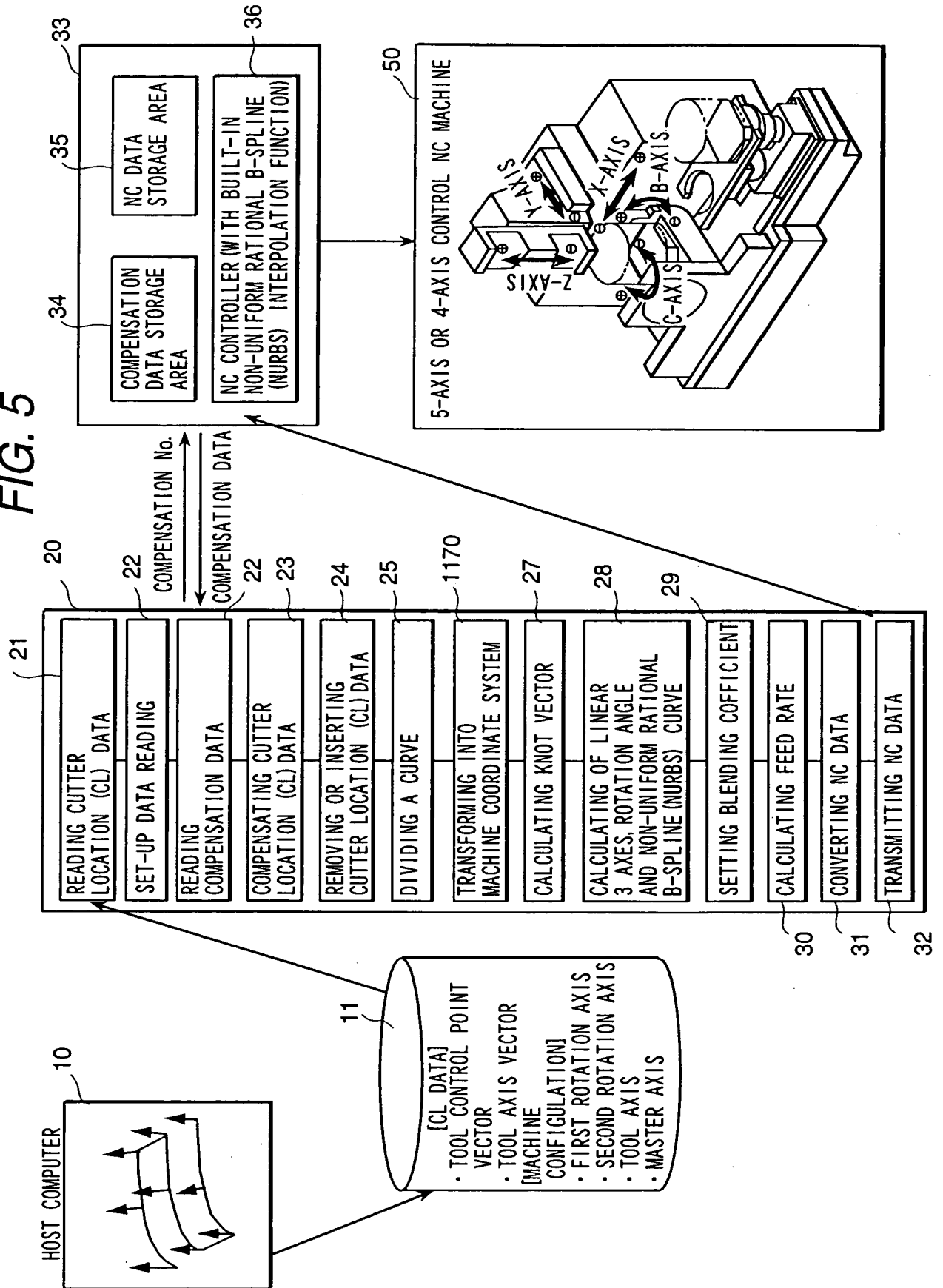


FIG. 6

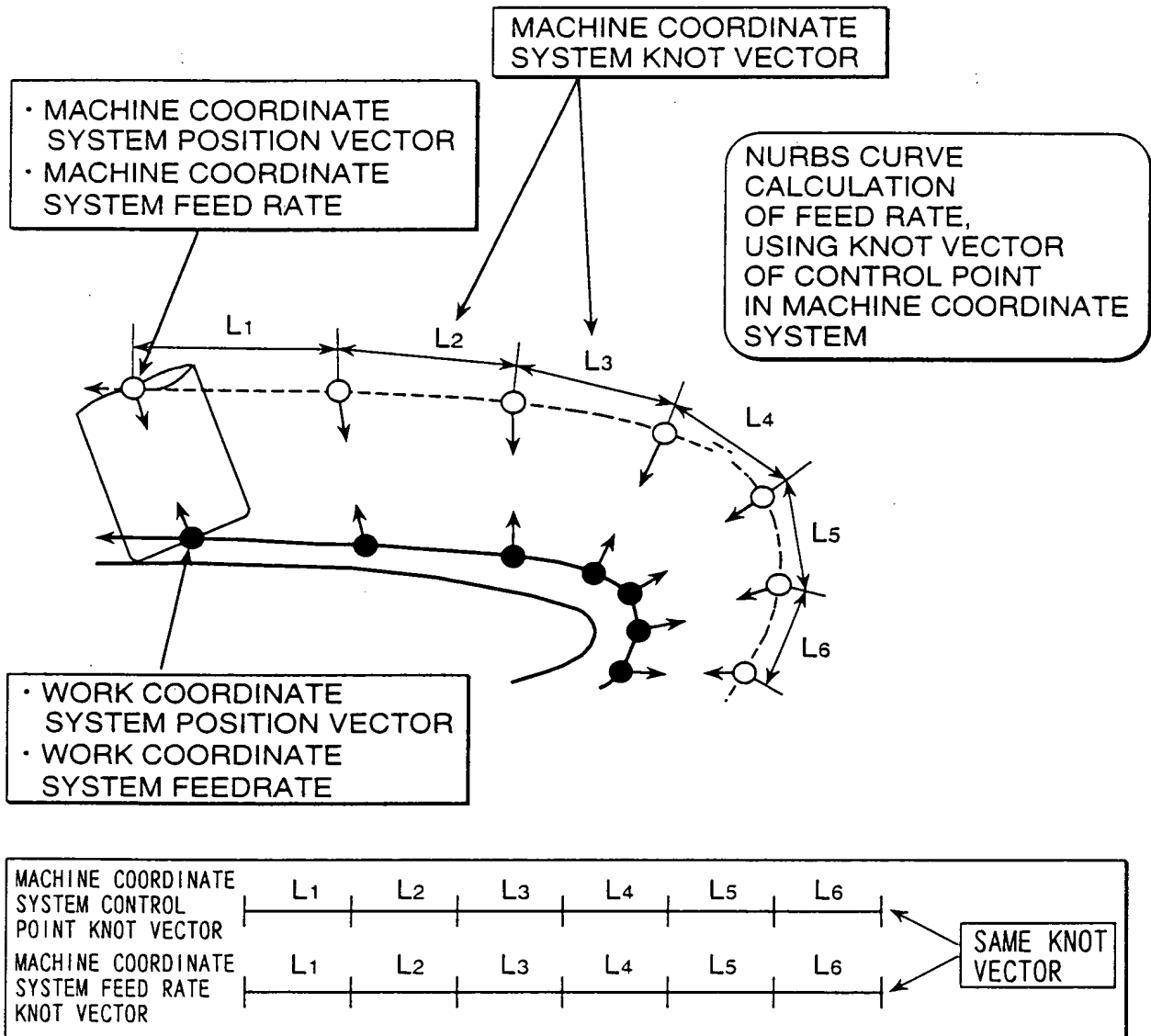
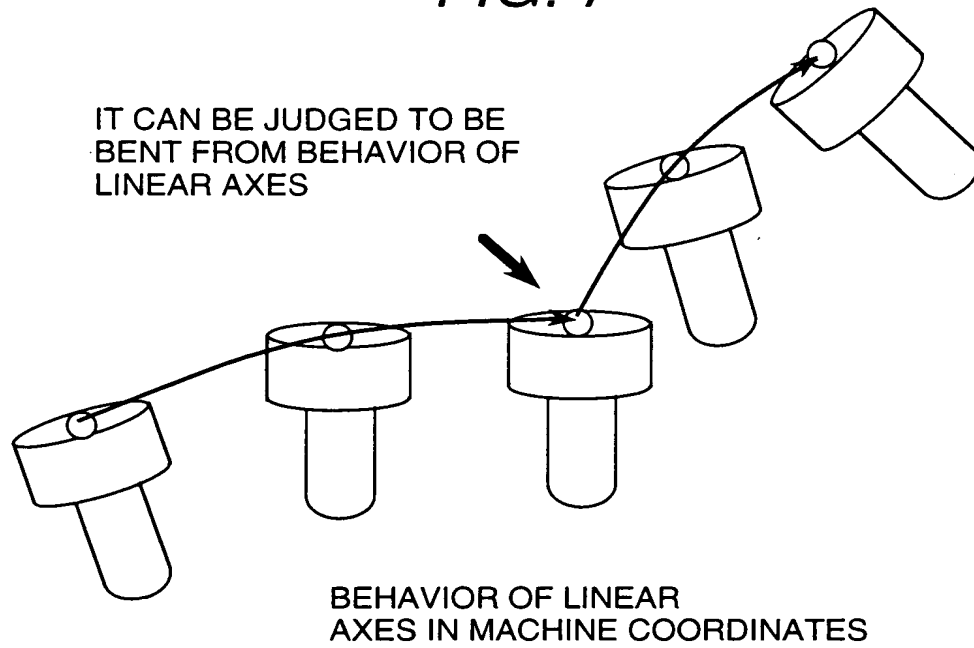
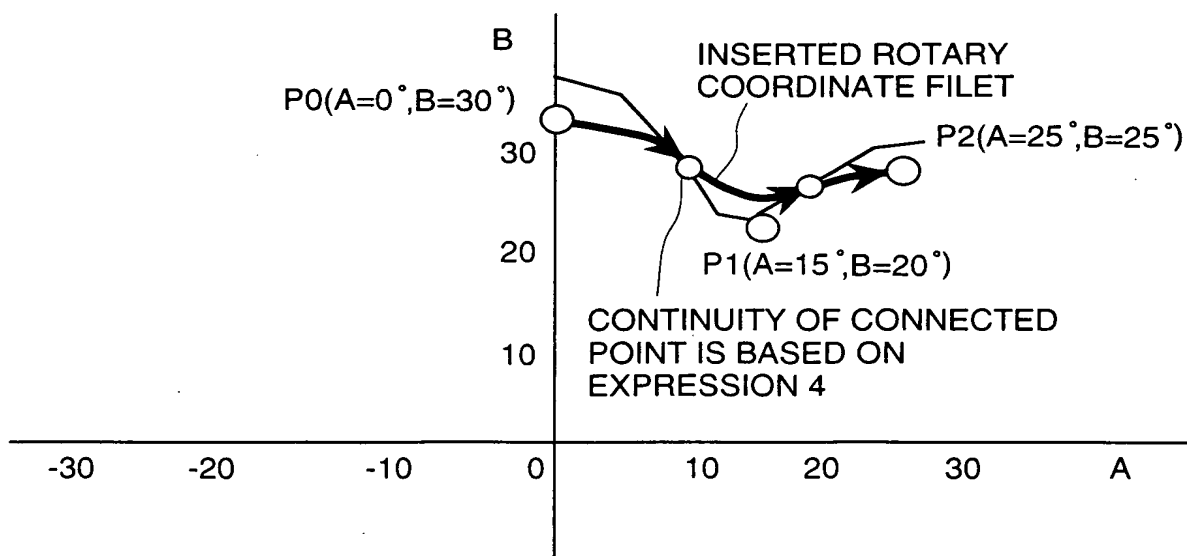
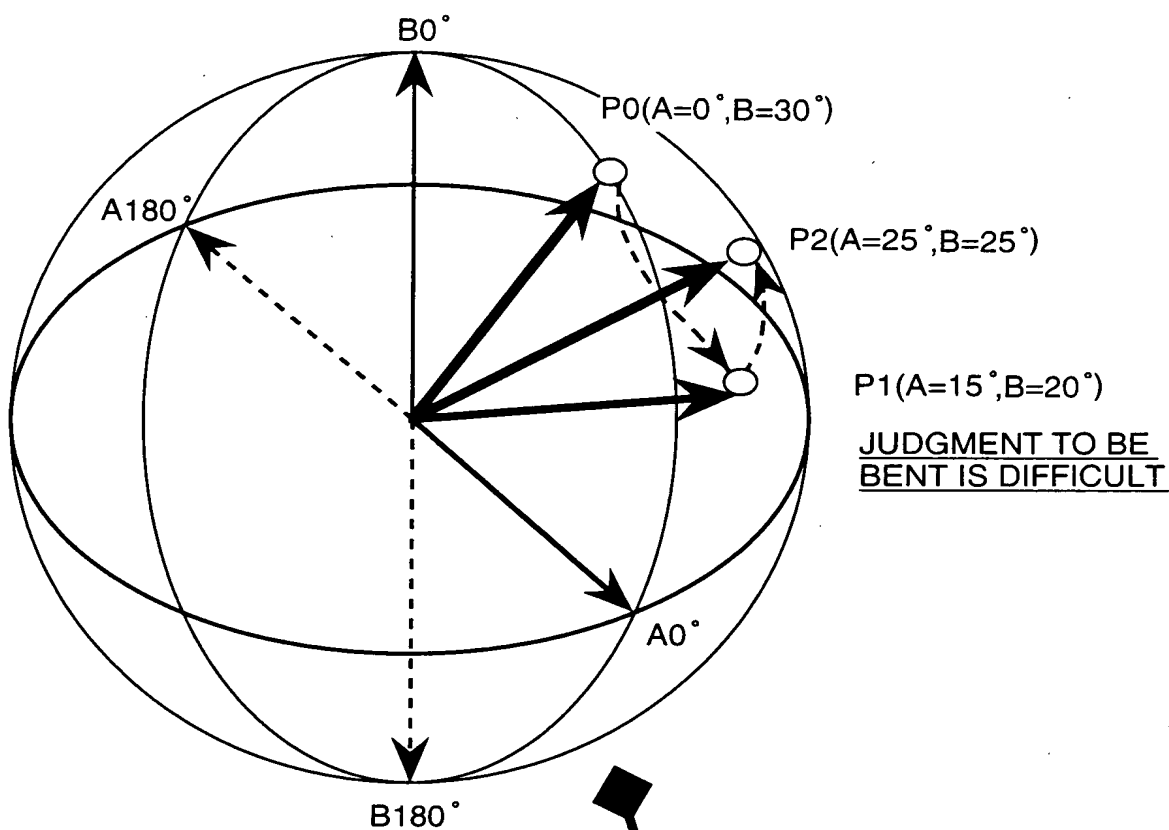


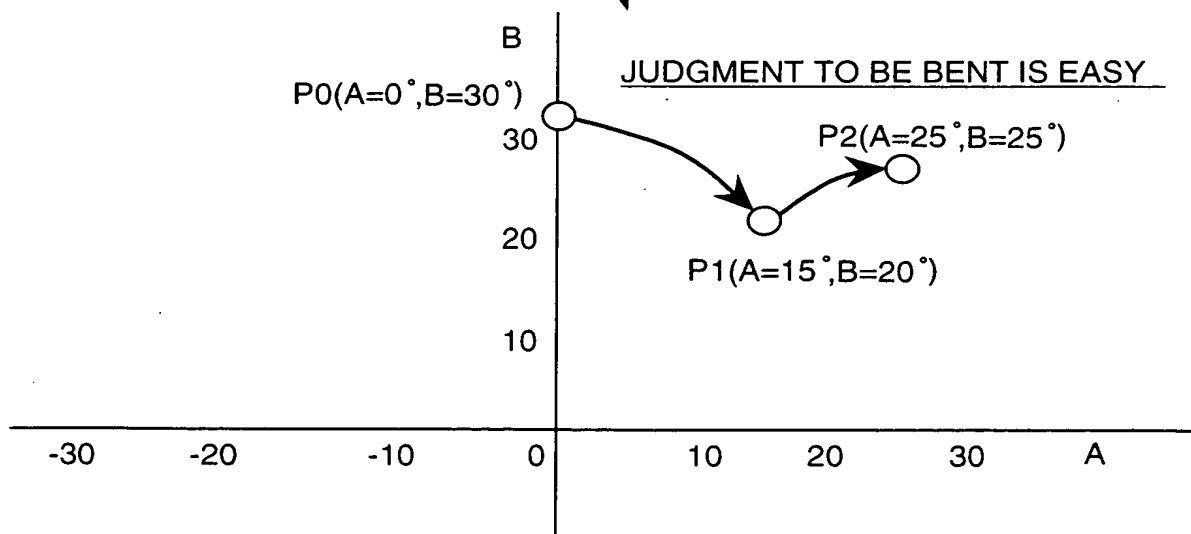
FIG. 7**FIG. 9**

FILET INSERTION IN EXPRESSION BY CONVERSION INTO ROTARY COORDINATE SYSTEM

FIG. 8



(A) EXPRESSION BY SPHERICAL COORDINATE



(B) EXPRESSION BY ROTARY COORDINATE SYSTEM

FIG. 10

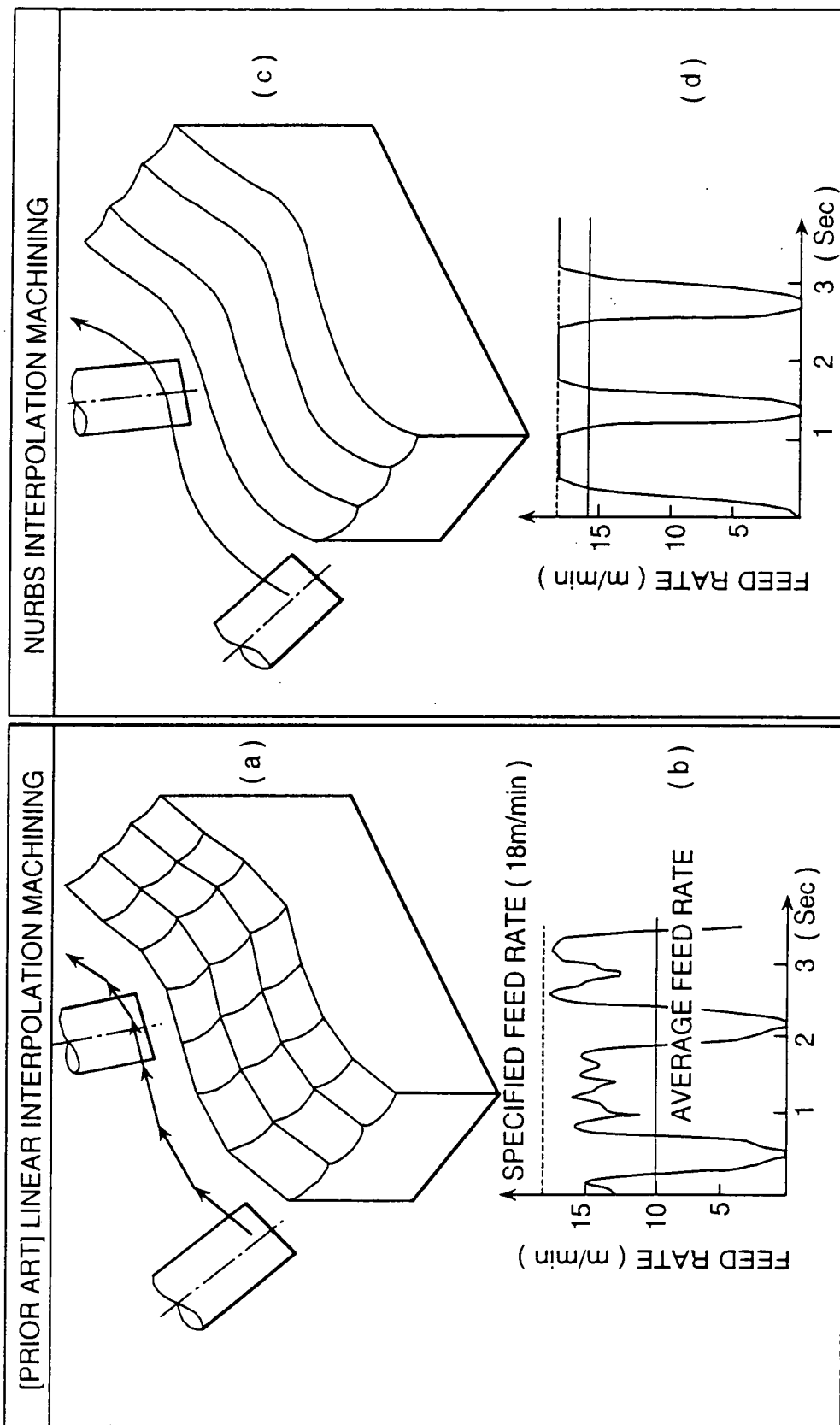


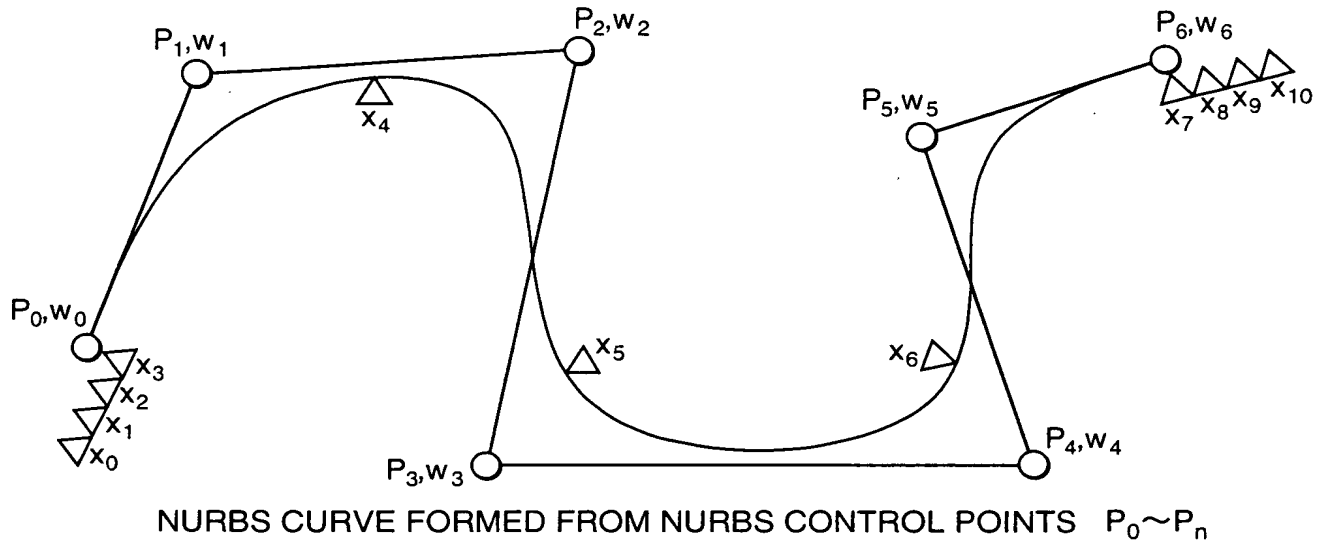
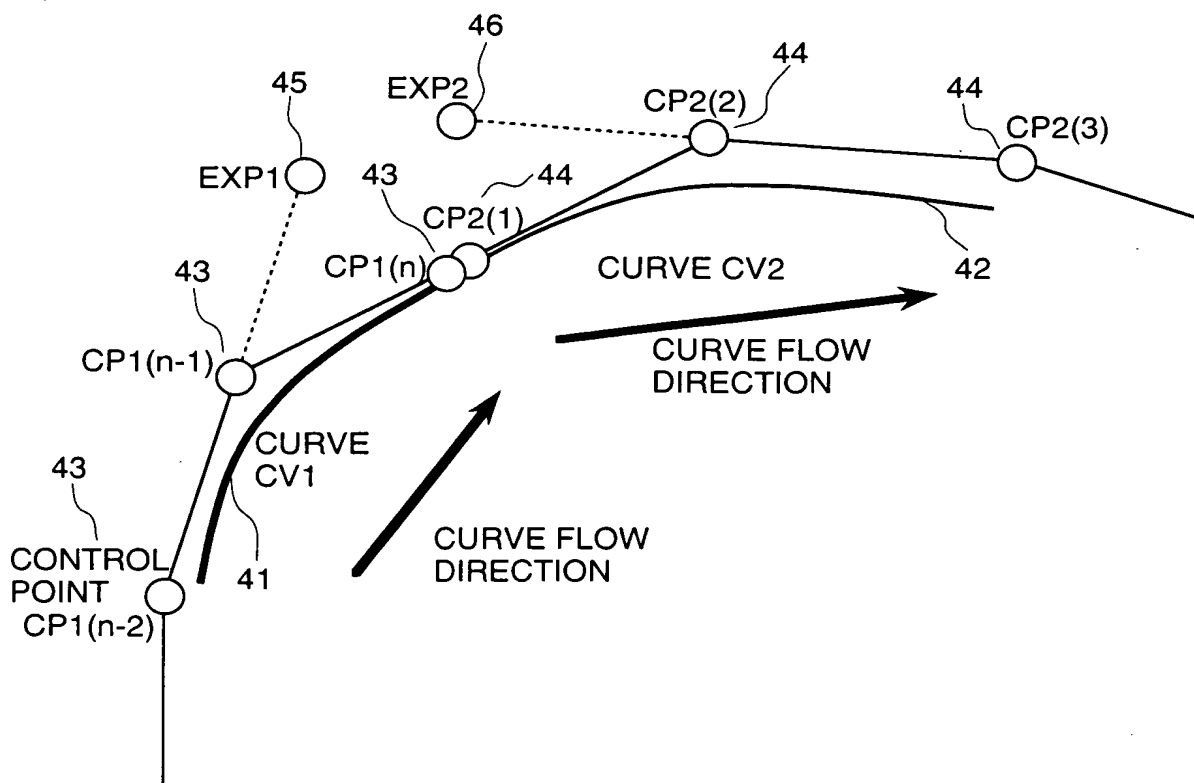
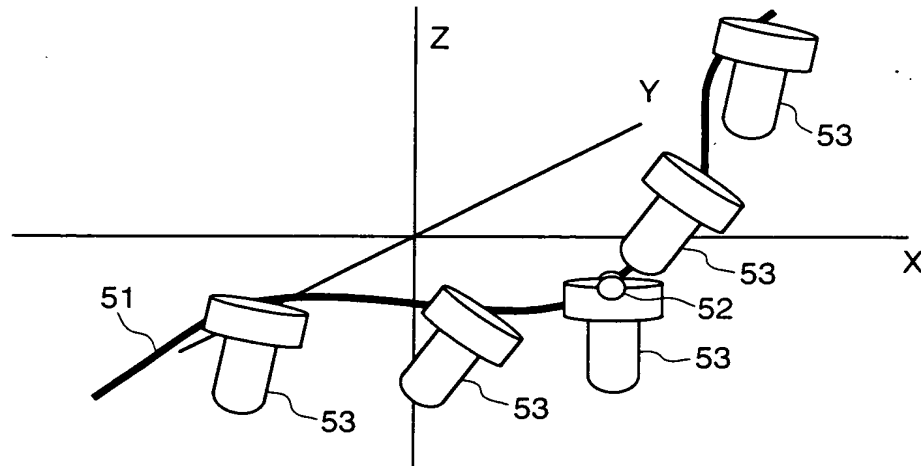
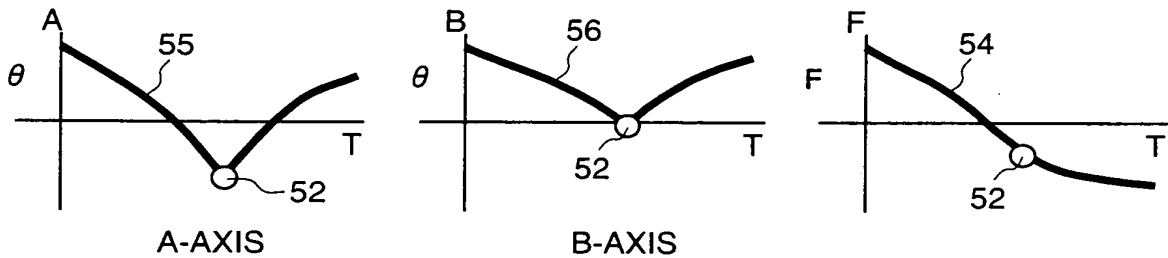
FIG. 11**FIG. 12**

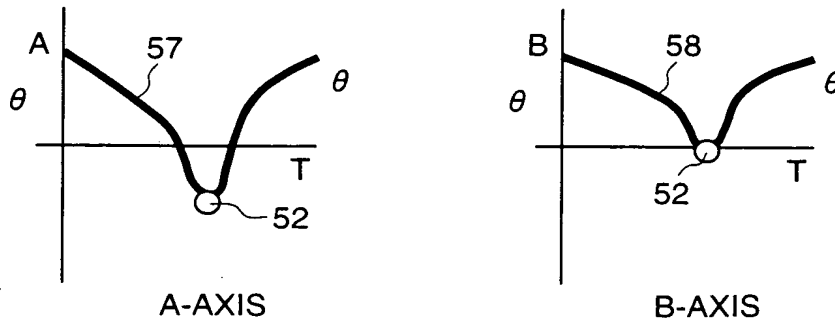
FIG. 13



BEHAVIOR OF LINEAR COORDINATE
AXES IN MACHINE COORDINATES



BEHAVIOR OF ROTARY AXES
IN MACHINE COORDINATES



BEHAVIOR OF ROTARY AXES
IMPROVED IN RAPID CHANGE

FIG. 14

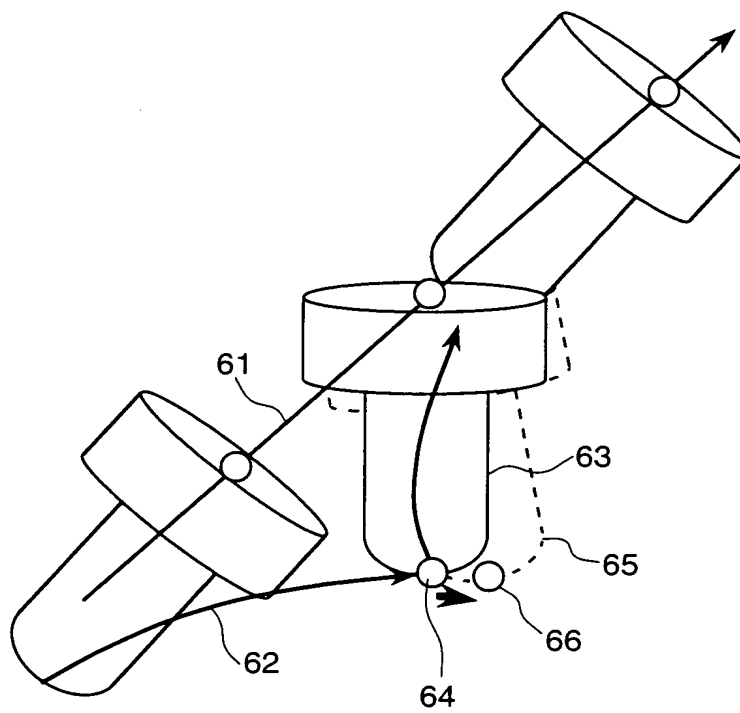


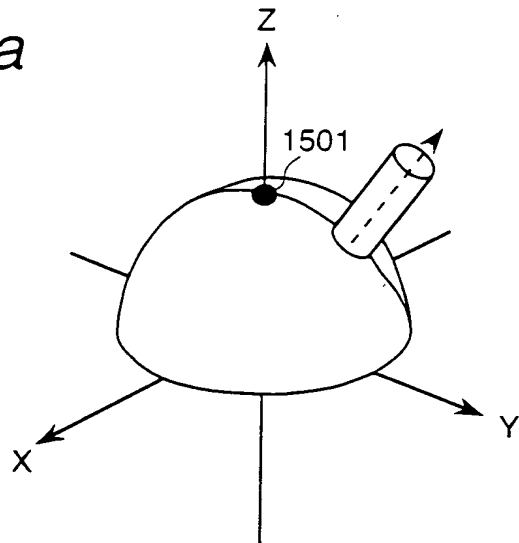
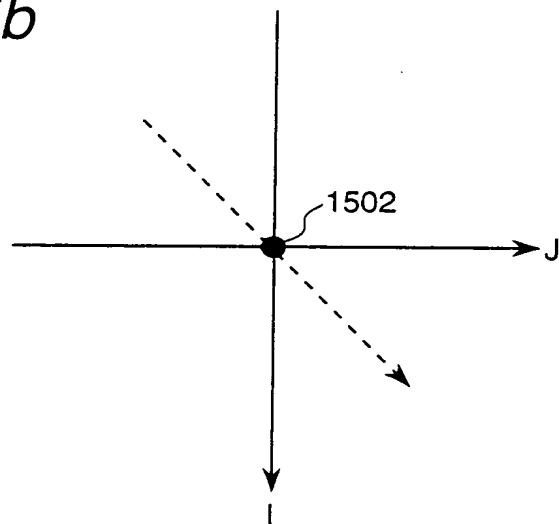
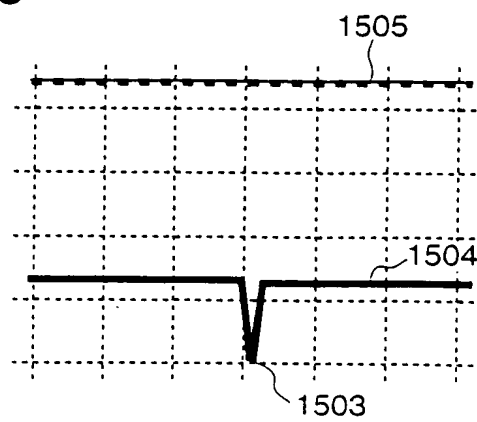
FIG. 15a*FIG. 15b**FIG. 15c*

FIG. 16a

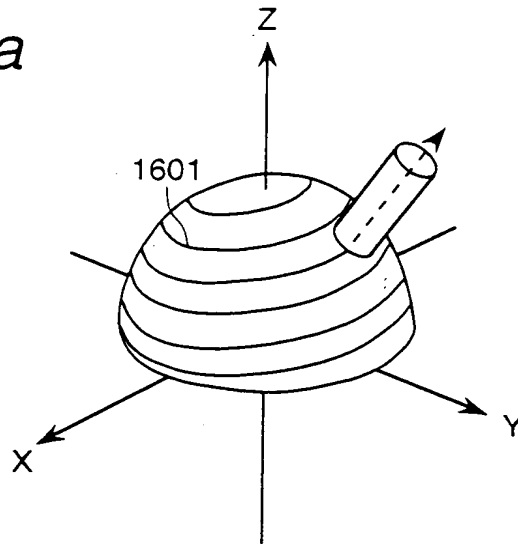


FIG. 16b

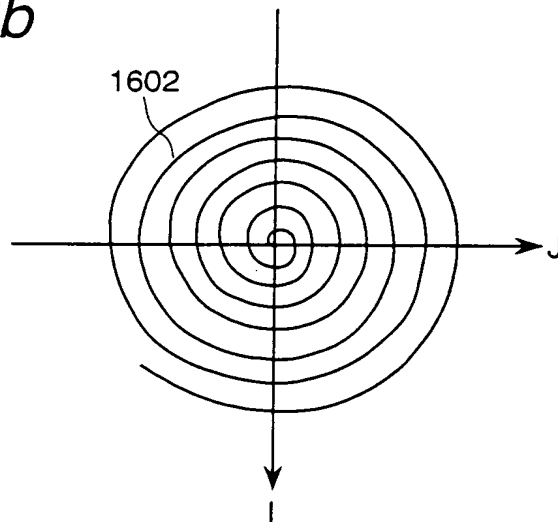


FIG. 16c

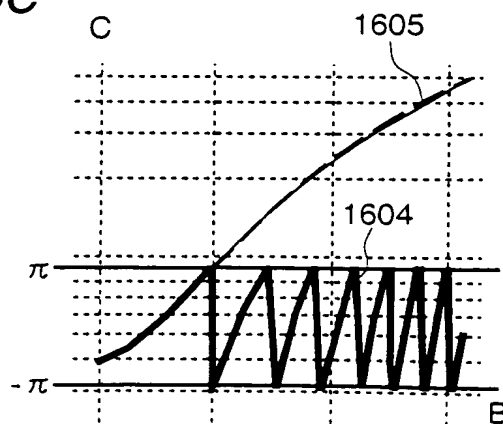


FIG. 17a

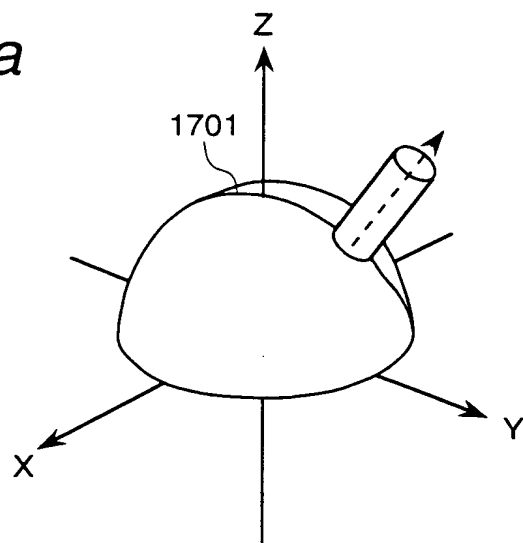


FIG. 17b

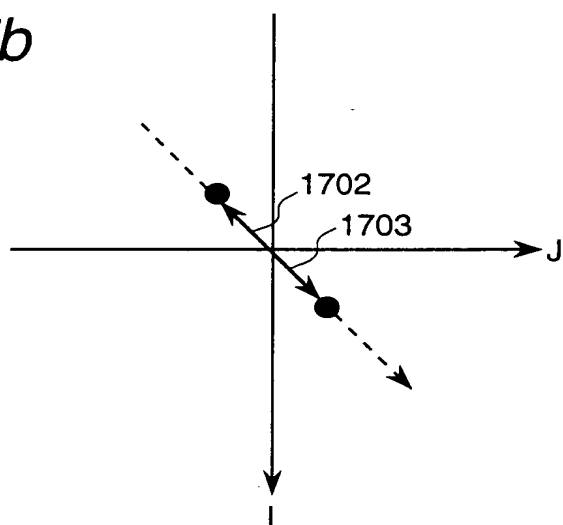


FIG. 17c

